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ROBERT C. KAMMERER

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AN EXPLORATORY PSYCHOLOGICAL STUDY OF CRIPPLED CHILDREN[1, 2]

By Robert C. Kammerer
Indiana University

CHAPTER I

INTRODUCTION

The influence of crippling on the personality development of children is a subject on which there is a relatively small amount of definite information. The detailed researches that have been carried out on behavior problem, feebleminded, and other types of exceptional children have not been duplicated in the case of those with physical handicaps. This lack of extensive experimental verification probably accounts for the considerable disagreement concerning the part played by the crippling on adjustment.

A. Literature of Opinion

A large proportion of the literature treating of the psychological effects of crippling has arisen from speculations about those with physical defects. The general tenor of this literature of opinion is that crippling, because it interferes with the child's intellectual, emotional, and social development, inevitably leads to a "crippled" or disordered personality.

Although there is agreement that personality maladjustment results from crippling, there are essentially two points of view as to how it actually occurs. The first seems to assume that the presence of any sort of crippling or physical handicap is sufficient in itself to occasion the development of personality disorder. The second viewpoint maintains that in cases of personality maladjustment, the crippled child has been subjected to unwise family influences.

[1] This article is the major portion of a dissertation for the Ph. D. degree at Indiana University. Publications, Indiana University Psychological Clinic Ser. II, No. 25.

[2] Recommended for publication by Dr. C. M. Louttit, May, 1940.

Predominant among those with the former viewpoint is Wile (1925) who believes that crippling affects intelligence, stability, and social equilibrium. He believes that whatever interferes with normal development is bound to have a marked influence on personality and that physical limitations may, by thwarting normal development, cause shame, fears, doubts, prejudices, truancy, theft, vagrancy, neuroses and even psychoses. Physical defects, he contends, influence mental functioning, primarily, by affecting man's "emotional evolution." Anti-social behavior may not arise directly from the crippling, but it is influenced by the fact that the child is excluded from social and play groups.

Horowitz (1923) similarly points out the effects of crippling on personality development. He says, "Physical weakness or inferiority in an individual creates a peculiar state of mind, a mind on the defensive and desiring to obtain by other means that which a poor physique renders impossible. The unfortunate seems always imbued with the idea that he has been unfairly treated in the distribution of bodily favors, that society is opposed to him, regarding him as a useless being with no place in the economic structure. He becomes touchy, spiteful, vindictive and even malignant." A very similar idea is expressed by Smith (1937) who reports that the crippled child develops a feeling of helplessness and inferiority when he realizes that he is physically different from others and cannot play or work as they do. Straith and De Kleine (1938) also emphasize this general idea. Curti (1938) points out that the inability of crippled children to acquire the ordinary motor skills may leave them with a sense of weakness and inferiority which may cause "mental crippling." Kessler (1938), referring to occupational placement, says that maladjustment from crippling causes more difficulty in incapacity for work than does the actual physical handicap. This group of authors seems to concur on the opinion that crippling inevitably is a cause of personality maladjustment.

The second view is upheld by Elliot (1929) who points out that the behavior of a crippled individual cannot be adequately understood without knowing the attitudes of those with whom he associates. He believes that the child's mental attitude toward his defect is determined by the way others look upon it. Hubbard (1930) believes that the attitudes of the parents are of primary importance

in determining the child's successful adjustment. This is also the opinion of Curtis (1930) and Ruhrah (1934). Anderson (1934) emphasizes the importance of family attitudes in influencing successful adjustment. He maintains, "The way in which the whole family meets the situation determines to a large degree how far the child can go in adjusting himself to the problems of later life." He believes that the children should be kept from being objects of pity, should not be spoiled, and should be encouraged to do everything possible for themselves. Bartos (1932) believes that the attitudes of those about the crippled child influence his emotional life and, therefore, careful education will overcome possible ill-effects.

B. Experimental Literature

A few experimental studies have been carried on with crippled children, but have largely been measures of their intelligence. Fernald and Arlitt (1925) have studied a group of 194 cripples of all types. The mean I.Q. was found to be 82.35. Small variations of this were discovered when the groups were broken up into different disease classifications. The highest mean I.Q. was found for nutritional disorders, 86.53, and the lowest for spastic paralysis, 69.11. The mean I.Q. for the poliomyelitis group was 83.79, for the infectious group, 85.47. There was some slight suggestion that lower I.Q.'s tend to be found in those children in which the onset of the disease was before school age. There was another very slight suggestion of a decrease in intelligence with an increase in physical handicap.

A study by Lee (1931) of 148 cases of all types of crippling reported a mean I.Q. of 86.8 for the group. For the poliomyelitis group alone, the mean I.Q. was 92.0. The author felt that the low scores found for the group were not the result of the crippling but would have occurred anyway. Nilson (1933) reported an average I.Q. of 96.27 for a group of 169 children having all types of physical handicaps including crippling. Witty and Smith (1932) found a mean I.Q. of 84.5 in a group of 1,480 crippled children. Winkler (1931), in testing a group of 100 crippled children, found them equal to well children in mental development although about a half year retarded in "imaginational activity and in powers of observation." A group of 1,919 crippled children was examined

under the White House Conference Committee (1931) and was found to have intelligence quotients that compared favorably with those found on groups of unselected school children.

Several studies have attempted to measure maladjustment in cripples. Rosenbaum (1937) gave Thurstone Personality Schedules to a group of 43 crippled girls ranging from sixteen to twenty-five years of age and found them to fall within the classification *emotionally maladjusted*. Freshman college women come within the *average* classification. Nagge and Sayler (1933) gave the Neymann-Kohlstedt test for introversion to 144 physically handicapped children. No significant difference was found when the results were compared with a control group of normals. There was no correlation between the degree of introversion and the length of time crippled. In a study of the mental life of 20 cases of cripples, von Baeyer (1928) has pointed out that there are three kinds of effects of crippling: "1. The basic disease permanently or temporarily damages the biological substratum of mental life, 2. the condition of being a cripple threatens free development of mental capacities, and 3. the emotional tension caused by the experience of being a cripple may manifest itself in neurotic phenomena." Little evidence of warped development was found by Dresdner (1933) in a questionnaire study of 23 cripples.

Allen and Pearson (1928) in a case history study of 12 children with physical defects (including blindness and heart disease) have attempted to trace the influence of the defect on the personalities of the children. They have concluded that the personalities of some of them are not affected by their trouble but that in others a feeling of inferiority has arisen which manifests itself in a wish to be the center of attention, a feeling of shame, inability to face difficult situations, or a desire to compensate by attempting to grow up quickly, actually or in phantasy. They emphasize the fact that often the feelings of inferiority have causes other than the physical defect.

C. Statement of Problem

The present study is an exploratory, experimental attempt to obtain information concerning the influence of the crippling on the child's general adjustment. It is not expected that this research

will solve any problem conclusively, but it is hoped that certain trends or suggestions will be uncovered that may be subjected to more intensive study. Since this is the first part of an extended program planned to investigate the behavior of crippled children, its purpose also is that of examining and appraising various methods of approaching the problem.

It has been prompted, primarily, by the frequent requests received at the Psychological Clinic of the James Whitcomb Riley Hospital for Children from orthopedic physicians, internes, physiotherapists, and nurses as to whether or not the crippled child is likely to be worth the expenditure of the time and money necessary to correct his defect. This becomes a very practical problem when it is realized that such cases often require hospitalization from six months to a year. If, as one of the orthopedic physicians has suggested, the child is likely to become delinquent, a social misfit, or remain badly maladjusted after treatment is completed, it is questionable whether or not he deserves the hospital space and the physician's time as much as other children on the long waiting list. It is believed that this study may aid in providing an answer to these problems or at least form the basis for future enlightening investigations.

CHAPTER II

CASES AND METHODS

A. Cases

Throughout the study a rather close relationship with the Orthopedic Department of the James Whitcomb Riley Hospital for Children was maintained. At the suggestion of Dr. George J. Garceau, the Chief Orthopedic Surgeon, scoliosis and osteomyelitis groups were selected for study because, in the opinion of the physicians, they are believed to show more evidences of maladjustment than some of the other types and, also, because a sizable number of cases appeared to be readily available.

Scoliosis is a lateral curvature of the spine which ordinarily is one of the possible sequelae of poliomyelitis. At the age of

adolescence, according to Mercer (1936), more girls are affected than boys. He also mentions that children with this disorder are of good color, feel well, and usually suffer little inconvenience. Most of the cases examined had had, or were awaiting surgical attention which requires long periods in the hospital and the wearing of casts and braces. Osteomyelitis is an infection of the bone resulting from an injury. It occurs mostly in boys and generally affects the lower extremities. As in the case of scoliosis, long periods of hospitalization are required for the treatment.

Even though a reasonably large number of these children were hospital in-patients at the time of the examination, there was not a sufficient number for research purposes, so that cases were drawn from the orthopedic out-patient clinic. Here, considerable difficulty was encountered in obtaining patients. Very often appointments were not kept or patients came from distant parts of the state and did not have enough time to complete the examination in an adequate manner. Over a five-month period it was felt, nevertheless, that a fairly adequate sampling at least of the scoliotic children was secured.

A total of 80 cases of crippling was obtained, 50 of scoliosis and 30 of osteomyelitis. The latter group was examined by Mr. Richard S. Ball. The mean age for the scoliosis group is 13.76 years and for the osteomyelitis group, 12.64 years. In the former group, 80 per cent were girls, while in the latter, 16 per cent were girls. The sex distribution is that expected of such disease classifications.

Since the James Whitcomb Riley Hospital for Children is a state institution, patients whose families have been declared legally indigent are accepted for treatment. In the case of orthopedic patients, however, the course of treatment is very long and expensive, and, consequently, even some middle class families are financially unable to pay for private care. The groups included in this study, while undoubtedly selected from the lower end of the socio-economic scale, are generally not of such low social status as other Riley Hospital patients.

B. Procedure

In order to determine as accurately as possible the effect of the physical defect upon the psychological development of these chil-

dren, the problem was approached from two angles: first, through an extensive testing program, and second, through interviews with both the children and the parents. The entire procedure required approximately three and a half to four and a half hours for each patient. In some cases the entire program was completed at one sitting, while in others, it was broken up into several test periods.

The tests used were: the revised Stanford-Binet Intelligence Scale, Form L; the Porteus Maze Test; the Kent Oral Emergency Test; the Vineland Social Maturity Scale; and the Rogers Test of Personality Adjustment. These tests are of the type frequently used in the clinic.

Following the testing program, the child and his parents were interviewed separately. Using the Indiana Psychodiagnostic Blank as a guide, a detailed social and developmental history of the child was obtained from the parents. In each case, the following facts were recorded whenever possible: the conditions surrounding birth, the disease history, the developmental history, the family background, the family relationships, the school history, and the socio-economic status. In addition to this, the parents were asked to give a description of the child's behavior at home, his adjustment with the family and other children, his neurotic tendencies, changes in behavior noticed with the onset of the difficulty, etc. Somewhat similar information was obtained from the patient himself. He was particularly urged to talk about himself and his difficulties. His attitudes, rationalizations, and attempts at evasion of certain subjects were noted especially. It is recognized that each case was not intensively analyzed, but because of the lack of time and because facilities for obtaining additional social history were lacking, this was not possible.

CHAPTER III

STATISTICAL RESULTS

The present chapter is devoted to an analysis of the test scores, ratings, correlations, comparisons, etc., of which a sizable number have been assembled. It is not expected that a very conclusive answer to the psychological problem of crippling will be contained

in these data, but it is believed that they will offer considerable aid in orientation and suggestions for further research.

A. Test Results

The distribution of I.Q.'s on the Stanford-Binet Intelligence Scale, Form L, for the scoliosis and osteomyelitis groups is given in Table I. The curves constructed from these data are presented in Figure 1. The mean I.Q.'s of the two groups are only four points discrepant, a difference which is not statistically reliable as shown by the critical ratio of 1.00. The reliability of the difference between the mean of the osteomyelitis group and the norm of the group used for the standardization of the Binet (Terman, 1937) is, also, not very marked, as shown by the critical ratio of .97. A considerably higher critical ratio, 2.78, suggests that the difference between the mean of the scoliosis group and the Binet norm is perhaps of greater significance.

TABLE I

DISTRIBUTION OF I.Q.'S OBTAINED ON THE STANFORD-BINET INTELLIGENCE SCALE, FORM L

Scores	Frequency of Scoliosis	Frequency of Osteomyelitis
60-69	5	1
70-79	6	4
80-89	5	2
90-99	10	7
100-109	10	5
110-119	8	8
120-129	5	2
130-139	1	1
	N 50	N 30
Mean	96.4	100.5
SD	18.1	17.15

As the osteomyelitis group was examined subsequently to the scoliosis group, certain changes in the test battery were instituted in order that more detailed and revealing information could be secured. One of the additions was the Oral Emergency Test constructed by Kent (1932). The chief advantages of this test are its emphasis on general knowledge rather than specific school knowledge, the lack of cumbersome material, and the speed with which it can be administered. Its value in the present study is obvious since in many of the orthopedic cases the children are confined to bed or are in heavy casts which do not easily allow the arm and bodily movements required in some of the other types of tests.

The norms provided for the Oral Emergency Test are only

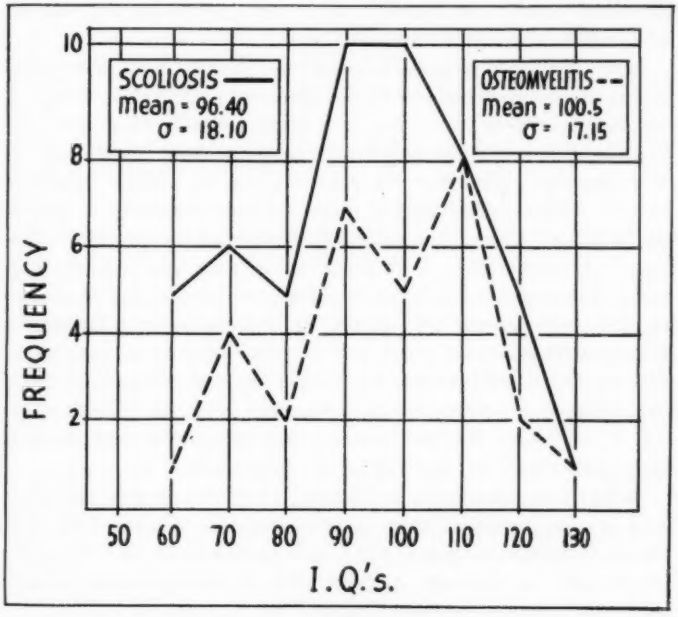

FIGURE 1

Distribution of I.Q.'s for 50 Children with Scoliosis and 30 Children with Osteomyelitis.

in year levels and the results are ordinarily given in terms of mental age and not ratios. For the purpose of this research, however, it is believed to be justifiable to follow the scheme of Elwood (1937) and Benton (1938) and translate scores into years and months of mental age and calculate I.Q.'s.

The mean I.Q. obtained for the osteomyelitis group is 101.74 with an SD of 14.25. No norms are available for this test but the mean I.Q. seems to compare closely with the mean I.Q.'s obtained on the Stanford-Binet for both groups.

The Maze Quotients obtained on the Porteus Maze Test fall within normal limits, the mean of the scoliosis group being 95.78 with an SD of 17.6 and the mean of the osteomyelitis group being 102.86 with an SD of 23.49. No norms are available for this test; the differences in the means of these two groups are not reliable as shown by the critical ratio of 1.34.

Next the social responsibility of the children was determined by the use of the Vineland Social Maturity Scale (Doll, 1936), a test constructed in year levels in a manner similar to that of the Stanford-Binet. As much information as possible is obtained on each item by questioning the parent about the child's social behavior. The examiner credits those items on which he is certain the behavior is usually or habitually performed by the child. The Social Quotient (S.Q.) is obtained in a manner similar to the I.Q. and is interpreted roughly in the same way. In addition to obtaining information from the parents, the scoliosis patients themselves were questioned about their own social maturity. A correlation (r) was calculated between the Social Quotients obtained by these two methods on thirty-two scoliosis cases and was found to be $.72 \pm .05$. This indicates that on the test, parents and children agree rather well in reporting social competence.

When the information is obtained from the parents the mean S.Q. for the scoliosis group is 100.0 with an SD of 11.85; and for the osteomyelitis group, 102.5 with an SD of 16.54. No norms are available for this test. A critical ratio of .50 indicates no reliable difference between the mean S.Q.'s of the two groups.

When the patients themselves were the informants the mean S.Q. of the scoliosis group was found to be 98.75 with an SD of 10.8. The difference between the mean of this group and that

of the scoliosis group in which the parents were the informants is also not statistically reliable since the critical ratio is .50.

The measure of personality chosen for inclusion in the battery of tests was the Rogers Test of Personality Adjustment (1931), a test which the children read and do by themselves. It consists of multiple choice questions, rating the self with the ideal and similar types of items which are ordinarily of great interest to children. In addition to a total score indicating general adjustment, it is possible to obtain four different diagnostic scores: the *personal inferiority score,* which roughly indicates the extent to which the child believes himself to be mentally or physically inadequate; the *social maladjustment score,* indicating whether he is "unhappy in his group contacts, poor at making friends or poor in the social skills"; the *family maladjustment score,* which indicates how well he adjusts to his parents and siblings, and the *day-dreaming score,* that tells the extent to which the child indulges in phantasy.

Rogers (1931) found the test re-test reliability obtained from a group of 43 children to be .71 $\pm$ .04 for the total scores. For the diagnostic scores, the reliability ranged from .65 to .72. The coefficients of validity calculated from clinicians' judgments and scores on the test were found to be: Personal Inferiority, .39; Social Maladjustment, .43; Family Maladjustment, .38; and Day-dreaming, .48.

In spite of the low reliability and validity of the test it was chosen largely because it was believed that a subjective analysis of each child's performance would offer additional insight into his behavior. It was believed also that the child might react differently and with less inhibition to the objective, non-personal type of situation offered by the test.

The mean total score of the scoliosis group on the Rogers Test is 38.45 with an SD of 9.25. This is just two points below the norm and falls within the average classification of scores. The critical ratio between the mean and the norm is 1.11 and indicates no significant difference.

The section on Personal Inferiority yields a mean score of 14.09 with an SD of 5.1. This comes within the average classification of Personal Inferiority scores and is not statistically different from the norm for this scoring.

The mean score of the section on Social Inferiority is 15.57, SD 9.16, which falls within the classification of poor adjustment. The reliability of the difference between the mean and the norm, however, is not significant since the critical ratio is 1.65.

The mean score on the Family Relationship section of the test is 6.97 with an SD of 2.91. This is 5.69 points below the norm and falls within the classification of good relationship. The critical ratio here is 3.28, indicating that the difference between the mean and the norm is rather markedly significant.

On the section of the test scored for Day-dreaming, the mean was found to be 4.34, with an SD of 2.97. This is in very close agreement with the norm for this test. There is no reliable difference between the mean and the norm, as shown by the critical ratio of .52.

In general, the results obtained on the Rogers Test are not believed to be adequate measures of personality. The curves have been more skewed and the standard deviations larger than on the other tests administered. This is believed to be accounted for largely by the inaccuracy of the measuring instrument since, as has been previously mentioned, both the reliability and validity of the test are quite low. It is also to be noted that certain items of the test were distasteful to the patients, particularly item number six in which the child was asked to rate members of his family according to how much he loved them. It is estimated that roughly one-fourth of the children said they were unable to do this, but made some attempt at it after being urged by the examiner.

B. Ratings

The next problem was that of making use of all of the case material for the purpose of establishing a judgment of the child's general adjustment. Everything available was considered, results of psychological tests, the accounts given by the parents of the child's behavior, the child's behavior and attitude during the tests and interviews, and his own account of his behavior. The judgments were impressions obtained from a consideration of these more or less objective facts and were not based on detailed analyses.

In order to establish the validity of this method of rating, Dr. C. M. Louttit, Director of the Indiana University Psychological Clinics, was asked to read the case material and rate the cases on the same scale used by the author. The coefficient of contingency calculated between these two sets of ratings was found to be .61 for the scoliosis group. Rho was .71 between these same ratings. For the osteomyelitis group, a similar scheme was employed and the coefficient of contingency was calculated between the ratings of Mr. Richard S. Ball, the examiner, and Dr. C. M. Louttit. For 22 cases it was found to be .70. Rho between these same measures was .71. These results for both groups show a large measure of agreement between examiners as to the degree of maladjustment exhibited by the children.

The scale on which the cases were rated was divided into the five points indicated: (1) a very good adjustment, (2) a fair adjustment, (3) average adjustment, (4) poor adjustment, and (5)

TABLE II

DISTRIBUTION OF TOTAL SUBJECTIVE RATINGS OF ADJUSTMENT

Total Ratings	Frequency of Scoliosis	Frequency of Osteomyelitis
1	0	0
2	0	0
3	1	0
4	7	2
5	6	2
6	9	7
7	9	6
8	12	3
9	6	1
10	0	1
	N 50	N 22
Mean	6.56	6.59
SD	1.66	1.46

very poor adjustment. The total subjective adjustment score for each case is the sum of the ratings of both raters.

In Table II is given the distribution of total subjective ratings of adjustment for both groups. The mean of the scoliosis group is 6.56 with an SD of 1.66 which indicates that the group is essentially average, but tends toward the upper (poorer) limits of this classification. The mean of the osteomyelitis group is 6.59 with an SD of 1.46 and compares very closely with the mean of the scoliosis group. A critical ratio of .03 indicates no reliable difference between these averages.

Next it was felt necessary to devise some means of evaluating the severity of the disorder. It was first decided to use the physician's judgment of the amount of defect, based on analysis of the X-ray photograph. This method was abandoned when it was discovered that a very serious defect might be present which did not change the outward appearance of the child. The most satisfactory system for the purpose of this study was found to be a rating by the examiner of the cosmetic appearance which the child presented at the time of the examination. A five-point scale was used to classify each patient: a rating of 1 indicated no noticeable influence of the crippling; a rating of 2 indicated a slight defect; a rating of 3 indicated a moderate amount of defect; a rating of 4 indicated considerable defect; and a rating of 5 indicated a very severe defect. The mean severity was 2.97 which indicates that the group as a whole presents only a moderate amount of crippling. The osteomyelitis group presents an entirely different disorder which does not lend itself to the scheme used in the above group. Ratings of the degree of this defect were not obtained.

In order to establish the period of duration of the disorder the medical record on each case was examined very carefully. When possible, this was checked during the interview with the parents. The mean duration for the scoliosis group was found to be 4.75 years.

C. Comparison of Extremes

According to the group averages obtained from the results of testing and rating, not many significant variations from the normal have been discovered. A further analysis from a different angle of

approach seems to be necessary to uncover additional information. The method of correlation has been considered and in some cases been employed, but as a general procedure, it is felt to be of limited use in this situation because of the relatively small number of cases. A method considered superior in distinguishing general trends is that of the comparison of the means and medians of the groups of cases at the extremes of each distribution.

Crippling is not treated here as if it were a category entirely apart or different than normality. A continuum is considered to exist between the height of physical perfection and the extreme of physical defect. Here we are not interested in those cases in which a possible defect is so slight as to be of no importance, but only in those in which the disorder is severe enough to warrant orthopedic attention. Within this group wide deviations of crippling have been discovered, extending from very mild to very severe states. We should like to bring out any possible differences that might exist between these two states either in test performance or in general adjustment, and consider the comparison of the extremes, already mentioned, as the most effective procedure. Conversely, extremes of test performance have been compared as to extent of crippling, thus offering an additional check on the possibility of relationship. A slight extension of this method has included such things as extremes of duration of the disorder, extremes of subjective ratings of adjustment, extremes of I.Q.'s, extremes of S.Q.'s, extremes of MQ's, and extremes of Rogers Scores. In Table III is given the medians of the extremes of the various measures.

Duration. First of all, we shall consider the differences in length of crippling. Two measures of duration are available: one in terms of the absolute length of time, and the other in relative terms or in the percentage of life the child has been affected. For example, a ten-year-old child crippled for five years would be affected 50 per cent of his life, while a fifteen-year-old child crippled for five years would be affected only 33 per cent of his life. When the few cases at the extremes of duration were considered, it was discovered that the individuals have the same rank, whether differentiated in absolute or relative terms.

In comparing these two categories in Table III we find that

those having had the crippling the longest time have the worst subjective rating of adjustment. Also, in comparing the poorest and best adjusted (according to subjective rating of adjustment), it is found that the former group has had scoliosis a longer number of years and a greater percentage of their lives. As a further check, a correlation (r) between the number of years duration and subjective ratings of adjustment was calculated and found to be $.29 \pm .08$. This is not believed to be very significant since the distribution of the number of years of duration is markedly skewed.

Higher social maturity was found in those cases crippled for the shortest length of time, and those having the highest social maturity have been crippled the shortest length of time. Duration seems to have very little influence on the Rogers Total scores since there is essentially no difference between the extremes of duration on the Total scores or between the extremes of Total scores on duration. A low negative correlation ($r = -.12 \pm .10$) between duration and Rogers Total scores supports this observation.

It would appear from this analysis that duration does not seem to have any considerable influence on the personality adjustment of children. The correlation between duration and the subjective ratings of adjustment which is probably the most important of the statistical analyses made in this section fails to indicate more than a low positive correlation of questionable reliability.

Severity. Next, we shall consider the differences in the severity of the disorder. It will be observed from an examination of Table III that the most severe cases obtain a higher or worse subjective rating of adjustment than do the less severe cases. It will also be observed that the poorest adjusted individuals have the most severe cases of crippling. A rank order correlation was calculated between these two measures, and rho was found to be $.51 \pm .08$, indicating an appreciable amount of relationship.

It will be noticed further from the tables that the most severe cases show slightly less social maturity, and that those with the lowest social maturity are the most severe cases. The influence of severity on the Rogers Total scores is not very definite. The most severe cases have slightly worse Rogers Total scores, but both extremes of Rogers scores show approximately equal severity. It should also be noted that the most severe cases have had the

crippling longest, and, conversely, those crippled longest have the most severe cases. The most significant finding from this analysis appears to be the appreciable relationship between severity and personality maladjustment.

Rogers Test of Personality Adjustment. On considering the Rogers Total scores, we find that those having the worst scores also have the poorest subjective ratings of adjustment, and that those having the worst subjective ratings of adjustment have the worst Rogers Total scores. A correlation between the Total scores and the subjective ratings ($r = .14 \pm .10$) indicates a slightly positive, but not very significant, relationship.

Among the sub-sections of the Rogers test, those for day-dreaming, family adjustment, and social adjustment, gave results of some interest. It will be noticed from Table III that those who day-dream most are less socially mature, and those least socially mature day-dream most. Those who day-dream most have worst Rogers Total scores, and those having worst Rogers Total scores day-dream most. Those day-dreaming the most have the worst subjective ratings of adjustment; the converse of this is also true. Those who day-dream the most have had scoliosis for a longer time; however, those crippled the longest and shortest day-dream an equal amount. No relationship could be discovered between severity and day-dreaming.

It will be recalled that in an earlier discussion of the Rogers test, some indication was discovered that the group rather definitely showed good family relationships but tended to show average or poor social relationships. Table III makes it possible to check further this observation. When extremes of severity are examined, it will be noticed that those having the most severe cases tend to have the worst social relationships, but the best family relationships. A consideration of the extremes of duration shows the same general picture. The extremes of family relationship and social inferiority scores, however, fail to follow out this same pattern. Those with poor family relationship scores also show poor social inferiority scores and vice versa.

A comparison of the results of the Rogers test and the subjective ratings of adjustment fails to reveal a very high measure of agreement. Apparently the two instruments are not measuring

TABLE III

SHOWING MEDIANS OF THE EXTREMES OF VARIOUS MEASURES

	IQs.	MQs.	SQs. (m)	SQs. (pt)	Tot. Rog.	Rog. PI	Rog. SI	Rog. FR	Rog. Dd	No. Yrs. Dur.	% Life Dur.	Sev-er-ity.	Sub. Rat. Adj.
Lowest IQs.	(10)* 70	(5) 66	(10) 90	(6) 87.5	(8) 47.25	16.2	18.5	8.7	4.25	(9) 3.3	(9) 30	(6) 3	(10) 7
Highest IQs.	(10) 122.5	(8) 114	(9) 100	(9) 100	(9) 41	12.3	17	6.5	2	(10) 4.8	(10) 33	(8) 2.5	(10) 7
Lowest SQs. (parents)	(10) 72	(8) 84	(10) 83.6	(6) 86	(8) 44.66	16.3	16.5	5.25	4.25	(9) 4.8	(9) 31	(7) 3	(10) 6.5
Highest SQs. (parents)	(10) 101	(6) 99	(10) 111.5	(8) 107	(8) 38.7	15.3	15	6.5	1	(9) 1.8	(9) 11	(7) 2	(10) 6.5
Highest (worst) Rogers total	(10) 75.5	(6) 89.5	(9) 95	(8) 95	(10) 48.15	16.65	19	9.5	4.25	(10) 3.6	(10) 23	(8) 3	(10) 7
Lowest (best) Rogers total	(10) 99	(10) 89.5	(6) 101	(9) 95	(10) 27.65	9	12	5	2	(9) 3.4	(9) 26	(8) 3	(10) 6
Highest (worst) Rogers PI	(11) 100	(8) 99	(11) 97	(9) 95	(11) 40.5	19.3	14	7	4	(11) 3.3	(11) 23	(7) 3	(11) 6
Lowest (best) Rogers PI	(10) 105.5	(9) 86	(7) 100	(8) 93.5	(10) 27.75	8.15	12.5	5.25	2.5	(10) 7	(10) 47	(9) 3	(10) 7.5
Highest (worst) Rogers SI	(10) 86.5	(6) 110	(9) 97	(9) 95	(10) 47.35	15	20.5	9.5	2	(10) 3.35	(10) 24	(6) 3.5	(10) 7

Lowest (best) Rogers SI	(11) 98	(6) 95	(9) 102	(10) 92.5	(11) 34.5	16	10.5	5	2	(11) 4	(11) 19	(9) 3	(11) 6
Highest (worst) Rogers FR	(10) 86.5	(7) 109	(10) 98	(9) 95	(10) 47.65	16.2	19.6	11	2	(10) 3.15	(10) 23	(9) 3	(10) 6.5
Lowest (best) Rogers FR	(12) 94.5	(8) 78.5	(8) 95	(10) 96.5	(12) 37.55	14.45	15.5	3.5	3	(10) 2.75	(10) 20.5	(8) 3	(12) 8
Highest (worst) Rogers Daydr.	(13) 100	(11) 96	(12) 97.5	(10) 96.5	(13) 42.3	15.3	15	5.5	6	(12) 4	(12) 28.5	(11) 3	(13) 8
Lowest (best) Rogers Daydr.	(11) 113	(7) 102	(10) 103.5	(9) 101	(11) 36.5	15	15	5.5	0	(11) 2.2	(11) 14	(7) 3	(11) 7
Longest Dur. (% Life & No. Yrs)	(10) 107	(6) 107	(9) 100	(5) 89	(5) 36.5	10.3	17	5	2	(10) 11	(10) 88.2	(8) 3.5	(10) 7.5
Shortest Dur. (% Life & No. Yrs)	(10) 102	(7) 105	(8) 105	(10) 99	(10) 37.4	15	13	6.5	2	(10) .75	(10) 4	(6) 2	(10) 6
Most Severe	(13) 94	(10) 106	(11) 99	(10) 95	(9) 41	12	17	5	2	(13) 3.6	(13) 40	(13) 4	(13) 8
Least Severe	(14) 104.5	(13) 96	(12) 103	(12) 99	(12) 36	14.1	13.5	6	2	(13) 2	(13) 19	(13) 2	(13) 6
Poorest Adj.	(13) 100	(10) 109.5	(13) 98	(9) 95	(11) 41.8	15.7	17	5.5	4	(12) 5.3	(12) 35	(11) 3	(13) 8
Best Adj.	(14) 103	(11) 93	(9) 97	(14) 98	(14) 36.2	13.8	13.5	7	2	(14) 2.75	(14) 18.5	(9) 2	(14) 4

*Number of cases.

the same thing. There was some indication that those obtaining low day-dreaming scores were the worst adjusted, the least socially mature, and have been crippled longest. There was also a slight suggestion that the children have good family, but poor or average social relationships. These results point out possible tendencies and offer suggestions for future study, but are not believed to be conclusive findings.

D. School Placements

Next, the school placements of these children were examined. The number of years discrepancy between the child's actual grade placement and the grade expectancy for his chronological age was checked and the mean calculated. The average amount of retardation was found to be .409 years. While no norms are available for comparison, it is believed that this is within normal limits and does not indicate a significant retardation.

The discrepancy was also checked between the child's actual grade placement and the grade expectancy for his mental age. Here, the mean discrepancy is .568 years indicating that these children are placed in school approximately a half year in advance of their mental abilities. This is also believed to be within normal limits. As far as can be ascertained from the information obtained, this group does not appear to vary in school placement with that of an average group of children.

E. Analysis of Questions on Rogers Test

Finally, an analysis of some of the individual items on the Rogers Test of Personality Adjustment will be considered. The principal reason this test was chosen as part of the test battery was because of its inclusion of a number of items on which rather specific information could be obtained. An examination of the responses on these items should provide additional data from a slightly different approach.

The first section, *Number One*, provides a means of checking the occupational choices of the children. The directions say, "Suppose that just by wishing you could change yourself into any sort of person. Which of these people would you wish to be? Write

a '1' in front of your first choice, a '2' in front of your second choice, and a '3' in front of your third choice." Weighted totals for each choice have been calculated and are provided in Table IV.

The choices most often checked were *nurse, teacher,* and *housewife.* When it is considered that the large majority of the group were girls with a considerable amount of experience as patients in a hospital, these choices are understandable and come within the normal expectancy.

TABLE IV

SHOWING WEIGHTED TOTALS OF OCCUPATIONAL CHOICES ON SECTION NUMBER ONE OF THE ROGERS TEST

Occupational Choice	Weighted Totals	Occupational Choice	Weighted Totals
Nurse	30	Princess	7
Teacher	29	Actress	7
Housewife	28	Engineer	6
Movie Star	19	Cowboy	3
Stenographer	18	Detective	3
Artist	17	Inventor	2
Doctor	16	Prizefighter	2
Singer	16	King	2
Business Woman	11	Captain	1
Aviator	10	Salesman	1
Business Man	9	Policeman	0
Poet	8	Fireman	0
Storekeeper	7	Lawyer	0

In the next section of the test, *Number Two,* the children are asked to select their first, second, and third "biggest wishes" from a list of fourteen. The weighted totals for each wish are given in Table V. The wish chosen by far the most often was *to be stronger.* This may be significant in indicating inferiority, but it is probably the normal desire of the child to possess superior strength since other items indicating possible inferiority, such as the desire to be better

TABLE V

SHOWING WEIGHTED TOTALS OF CHOICES OF WISHES ON SECTION NUMBER TWO OF THE ROGERS TEST

Wishes	Weighted Totals
To be stronger than I am now	77
To be brighter than I am now	28
To play games better	26
To be bigger than I am now	23
To have more money to spend	23
To have more friends	22
To be better looking	17
To have the boys and girls like me better	13
To have my father and mother love me more	10
To get along better with my father and mother	6
To be a boy (if you are a girl)	2
To be grown up and get away from home	2
To have a different father and mother	0
To be a girl (if you are a boy)	0

looking, are not checked with any marked degree of frequency.

Section *Number Five* of the Rogers Test consists of a series of multiple choice questions covering such things as play interests, friendships, desire to grow up, and family relationships. The answers to each question are varied so that it is possible to select the presence of widely deviating behavior. For example, in the question, *How well can you play ball?* it is possible to select those who are unable to play at all, those who play moderately well, and those who play very well. In Table VI is given the total number of answers to each of the questions in the various groupings.

TABLE VI

SHOWING TOTAL NUMBER OF ANSWERS TO QUESTIONS IN VARIOUS GROUPINGS

A. Play Interests and Abilities

1. How well can you play ball?

Totals

2 a. can't play ball at all.
17 b. can play a little bit.
23 c. can play pretty well.
0 d. best player in my class.

5. Do you like to play games with the other boys and girls?

2 a. I don't because I can't play games very well.
0 b. They don't want me to play with them, because I can't play games very well.
19 c. I like to play games fairly well.
19 d. I like it a great deal.
2 e. I would rather play games than anything else I know.

9. Which do you like best?

6 a. to go off by yourself and play or read.
15 b. to play with one or two others.
21 c. to play with a whole crowd.

15. Do you like to get into rough games, wrestling matches, football games and things like that?

5 a. I like them very much.
14 b. I like them a little.
16 c. I don't like them.
7 d. I hate to have people push and pull me around.

B. Friendships

2. How many friends would you like to have?

0 a. none.
1 b. one or two.

6 c. a few good friends.
11 d. many friends.
24 e. hundreds of them.

13. Do other children play mean tricks on you?

16 a. never.
25 b. sometimes.
1 c. very often.

14. Do you have any good friends?

0 a. none at all.
1 b. one or two.
14 c. a few good friends.
24 d. many friends.
3 e. hundreds of them.

19. Do boys or girls like you best?

4 a. The boys like me better than the girls do.
17 b. The girls like me better than the boys do.
20 c. I am popular with both boys and girls.
1 d. I am not popular with either boys or girls.

21. Do you want people to like you?

2 a. I just can't stand it if people don't like me.
35 b. I always try very hard to make people like me.
4 c. I don't care very much, but I'm glad when people like me.
1 d. I don't care a bit whether people like me or not.

C. Desire to Grow Up

4. When you are grown up what sort of person do you want to be?

4 a. I want to be a very great person and do great things that people will talk about.
1 b. I want to be one of the leaders in whatever town I live in.
36 c. I want to be a happy ordinary person, with a good job.
1 d. I would rather not grow up.

7. Do you want to be a grown-up man or woman?
   - 5 a. I just can't wait to be grown up.
   - 25 b. I would like to be grown up.
   - 7 c. I don't want to be grown up. I would rather be just as I am now.
   - 5 d. I would like best of all to be a few years younger than I am now.

18. What do your father and mother want you to do when you are grown up?
   - 2 a. They want me to be a very great person and do great things that people will talk about.
   - 2 b. They want me to be one of the leaders in whatever town I live in.
   - 37 c. They want me to be a happy, ordinary person with a good job.
   - 1 d. They don't want me to grow up.

20. When do you think one has the most fun in life?
   - 5 a. When you are a young child.
   - 10 b. When you are between 9 and 12 years old.
   - 27 c. When you are between 12 and 25 years old.
   - 0 d. After you are 25 years old.

D. Relationships with Family

8. How well do your father and mother like you?
   - 6 a. I am the one they like best of all.
   - 6 b. They like me second best.
   - 0 c. They like all my brothers and sisters better than they like me.
   - 30 d. They like me well enough, but not better than my brothers and sisters.

11. How do you feel when your brother or sister is praised for something they have done?
   - 35 a. I feel proud of them.
   - 2 b. I wish I could do better than they have done.
   - 0 c. I don't like to have them praised.

1 d. I hate to have them do better than I can do.
2 e. I don't care.
1 f. I don't have any brother or sister.

16. Do people treat your brother (or sister) better than they treat you?

13 a. never.
26 b. sometimes.
0 c. often.
0 d. almost always.
1 e. I haven't any brother or sister.

As observation of Table VI indicates, in play interests, friendships, desire to grow up, and in family relationships, no very marked deviation from the normal appears. This information corresponds rather closely with that obtained from other sources in showing that these children do not seem to manifest any characteristic type of psychological maladjustment.

F. Summary

The results obtained on the psychological tests seem, in general, to indicate that the groups are of approximately average intelligence in both verbal and performance types of tests. The general adjustment as measured by the Rogers Total scores falls within normal limits. Likewise, the subsections of this test indicate average behavior except for a suggestion of better than average family adjustment. According to the subjective ratings of adjustment made by the author and another experienced examiner, the groups come within the average classification, although toward the upper (poorer) limit of this category.

Taking the cases at the extremes of each measure and comparing their performances on other types of tests or on adjustment, duration, severity, etc., it was possible to discover relationships that were not suspected previously. Correlations were calculated when a relationship appeared to be present. By this method a low positive correlation of questionable significance was found between duration and crippling. An appreciable positive correlation was found between severity and crippling.

An examination of the school placements of these children showed that they were only one-half year retarded for their chronological ages, and placed only one-half year in advance of their mental age grade placements. Both are believed to be within normal limits. An analysis of the various items composing the Rogers Test failed to reveal any significant deviations from normally expected responses. From these statistical results it would appear that the groups present the same types of behavior expected of any non-crippled, unselected group of similar size and composition.

CHAPTER IV

ANALYSIS OF CASE HISTORIES

The use of psychological tests and measuring instruments has provided important information bearing upon the problem, as has been discussed in the preceding chapter, and has raised many questions that can only be answered by further research. The limitations of psychological measurement in such a situation, however, are at once obvious. In the first place, there are not enough types of tests to cover every occasion which might conceivably be important; secondly, the attitudes of the individual during the interview, the amount of cooperation given, the attempt at evasion of questions, etc., are kinds of information that do not lend themselves to testing; thirdly, an historical account of the child's development cannot be obtained from any type of test. For these reasons and because it is believed to give a better general understanding of the whole problem, the case material has been given a major share of emphasis. The present chapter will be devoted to a subjective analysis of this material with the object of pointing out factors seemingly important in contributing to adjustment or maladjustment of those handicapped by physical defect.

There are several questions that one immediately thinks of in connection with this problem that may be answered or at least on which considerable understanding may be afforded. First of all, we should like to know what part the physical handicap itself plays in the maladjustment. From the statistical results it will be recalled

that there was a marked relationship between severity of crippling and extent of maladjustment. We want to know if there is any evidence to uphold this from the case material. We should also like to know the influence of duration upon personality adjustment.

Another question to be considered is that of over-protection of the child by the family. Is there any tendency for those who are most crippled and maladjusted to be over-protected by the family? Still another question involves the checking of an already suggested relationship that these crippled children tend to have poor social relationships but good family relationships.

Next, we should like to know if inferiority seems to result from crippling. Does the crippling either because of its influence on the appearance of the individual or because of the limitations it imposes upon his activity cause him to develop inferiority? It is believed that the case material can give considerable insight into this problem.

Other questions, the consideration of which should reveal important information, are, whether or not compensatory behavior arises, and whether or not the crippling seems to influence intelligence or any particular intellectual or age group. Finally, the question arises as to how a child severely crippled yet well adjusted handles the situation. In answer to this a case history will be presented in detail.

A. Influence of Crippling on Adjustment

The first question that has been raised concerns the importance of the crippling in influencing the later development of personality maladjustment. In attempting to clarify this point, the complete case material from the scoliosis group has been carefully analyzed and divided into three categories. The first category contains all of the cases in which, as nearly as could be determined, the scoliosis presents the major problem to be adjusted to. In the second category are included the cases in which it is believed that the scoliosis and other factors are about of equal importance. The third category includes only those cases in which some factor other than the crippling plays the primary role.

A general consideration of the case histories in the three categories reveals some interesting suggestions. Comparison of the group in which the scoliosis is the main factor and the group in which some other factor is predominant reveals that the latter group is made up largely of those showing mental retardation. It would seem that the latter group shows evidences of less severe maladjustment than the former. It must be kept in mind that since these cases showed considerable mental retardation, the amount of material concerning their adjustments obtained from the interview was consequently less, which fact may thus account for their seemingly better adjustment.

When the group in which scoliosis is the primary factor and the group in which scoliosis and other factors are of equal importance are compared, it has been noticed that the most maladjustment seems to be shown by the latter group. When the physical defect is complicated by other serious problems requiring adjustment, there is a suggestion that the child has more difficulty in arriving at a satisfactory solution. In addition to the general perusal of the case histories, the percentage of occurrence of certain characteristics was calculated for the three categories and is presented in Table VII. The observations made above are substantiated somewhat by these percentages but by no means indicate absolute certainty. Category II (Scoliosis and other factors of equal importance) shows the smallest percentage of desirable personalities, the highest percentage of over-protection, and the highest percentage of difficulty with family and siblings. From the lower half of Table VII it will be noted that this same category shows a slightly larger number of conduct problems, slightly lower I.Q.'s, slightly worse ratings of personality adjustment, and considerably longer duration of the disorder in terms of both percentage of life and number of years. On the other hand, it should be pointed out that there appears to be no difference between the two categories with respect to daydreaming, self-consciousness about appearance, social inferiority, compensations, or severity of the disorder.

In answer to the first question that has been asked; namely, what is the influence of the disorder on the development of personality maladjustment, we may say specifically that when the

TABLE VII

FREQUENCY OF VARIOUS CHARACTERISTICS AND MEAN SCORES IN THE THREE CATEGORIES OF SCOLIOSIS CASES

	Category I Scoliosis of Major Import	Category II Scoliosis and Some Other Factor of Equal Import	Category III Some Factor Other Than Scoliosis of Major Import
NUMBER OF CASES	21	15	14
	Per Cent	Per Cent	Per Cent
CHARACTERISTICS			
Socially Desirable Personalities	24	6	14
Over-protection	62	93	36
Day-dreaming	19	20	35
Self-consciousness about Appearance	57	60	43
Socially Inferior	57	53	14
Compensations	66	66	35
Difficulty with Family or Siblings	14	60	28
MEANS			
Mean No. of Conduct Problems	2.00	2.40	1.64
Mean I.Q.	105.00	99.00	81.00
Mean Subj. Adjustment	6.43	7.00	6.35
Mean Severity	2.90	3.09	3.00
Mean Per Cent of Life Duration of Scoliosis	33.00	48.00	23.00
Mean Years—Duration of Scoliosis	4.01	6.63	2.71

scoliosis alone is the most important factor, there is a slight suggestion that the general adjustment is worse than when any other factor, usually mental retardation, is of major importance. However, when the scoliosis is complicated by other factors of about equal significance, such as a broken home, bad parental attitude, difficulty with siblings, etc., there is also a slight suggestion that more maladjustment occurs than when scoliosis alone is the major problem. It appears that the children have the most difficulty in adjusting when there is more than one serious problem present. This conclusion is only suggestive and its verification should be the subject of future more detailed research.

B. Influence of Cosmetic Appearance on Adjustment

The next question for consideration concerns the influence of the cosmetic appearance on the adjustment. Does the severity of the disorder because it changes the child's appearance seem to have an ill effect on his personality? From the last chapter it will be recalled that when all the cases were considered, a substantial positive correlation was found between severity and extent of maladjustment. We should like now, through an examination of the case histories, to see whether this can be substantiated.

When the cases in which scoliosis is the most important factor are separated into the most and least severe groups and the adjustments of these groups are compared, there is a suggestion but not much conclusive evidence that severity has some relationship with maladjustment. Of the seven most severe cases, five show poor adjustment, one average adjustment, and one good adjustment. Of eight mild cases, four show poor adjustment, one average adjustment, and three good adjustment. If a high degree of relationship were present it would be expected that all severe cases would show poor adjustment and all milder cases, average or good adjustment.

It has been observed also from the case records that while there appears to be a slight tendency for severity to be associated with maladjustment often just the opposite is found. The following cases present examples of these differing types of influence. Case Number 5614 is one instance in which the change in the child's appearance seems to have had a great deal of influence on the child's maladjustment.

> *Case Number 5614.* This child is an eight-year-old boy of average performance level who has had a marked case of scoliosis for approximately three years and has developed feelings of self-consciousness and inferiority because of it. He is very timid at school and does not like to recite in class or to make friends with other children. He also tries very hard to get out of doing exercises and playing games. At home he seems to like to play by himself. The other children in the family are reported not to be "backward socially."

This child, while of average performance level and presumably subjected to very much the same type of training as his siblings who are slightly older and younger, has developed a markedly different type of social behavior probably because of his deformity.

In the following case, the disorder is rather severe, yet the child has made a satisfactory adjustment to it.

Case Number 5417. This is a twelve-year-old girl, slightly above average normal in performance level. Scoliosis has been present for about three years and her cosmetic appearance is considerably affected. The mother reports that just after the difficulty was noticed the child appeared to be self-conscious, but that in a short time this disappeared. Now her appearance does not embarrass her or make her feel inferior to others. She likes to play outdoors with the other children and seems to enjoy herself while with them. She makes friends easily.

Although the cosmetic appearance of this child is markedly affected, she has not developed feelings of inferiority or has not been socially handicapped. The next case is one in which the cosmetic appearance is only slightly affected, yet it seems to have been the basis of subsequent personality maladjustment.

Case Number 5489. This girl is fifteen years of age and has a normal performance level. The deformity developed about three years ago and has been continually growing worse although the child's cosmetic appearance has not changed severely. The child feels very self-conscious and inferior because of her condition. She is able to get along well with her friends but is very timid among strangers. She plays usually with children younger than herself. She has a much more "nervous" type of disposition than the other children in the family. According to the mother, the nervousness has developed since the scoliosis has grown worse.

This child although only mildly crippled has developed maladjustment and instability as a result of her condition. The mother stated that the child's emotional difficulties seem to have developed since the onset of the crippling and that previous to this the child had a much different type of disposition. It would seem that here the scoliosis has played a major role. The final example, showing good adjustment, concerns a case only mildly affected cosmetically.

Case Number 5390. This is a girl of approximately sixteen years of age and of average performance level. The scoliosis has been present almost two years, but affects the child's appearance only slightly. She is not embarrassed or self-conscious about her deformity and does not worry about her condition. She is the oldest child in the family and has not received an excessive amount of attention. The summer previous to the examination she did housework for her

aunt and was paid two dollars a week. She has a very pleasant personality, is sociable, and makes friends easily, although she is of a "quiet" disposition. No compensatory behavior has developed.

This girl seems to have been able to meet the problem presented by the crippling in a satisfactory manner. There is no evidence of any change in behavior which could be attributed to the influence of the deformity.

From all the evidence obtained here it would appear that physical handicaps may play a part in personality maladjustment, but whether they do or not is determined by some other factor in the situation. A bad cosmetic appearance alone does not seem to be sufficient to occasion the development of undesirable traits.

C. Influence of Duration on Adjustment

In determining the influence of duration of crippling on the development of personality disorder, an approach similar to the one employed in the previous section will be used. First, the cases in which scoliosis is considered to be the primary factor are divided into those crippled the greatest percentage of their lives and those crippled the smallest percentage of their lives. Of the former group, two show poor adjustment, one shows average adjustment, and one shows good adjustment. Of the latter group, six show poor adjustment, three show average adjustment, and four show good adjustment. If duration were to have any effect on adjustment, it would be expected that those having scoliosis the longest would have the worst adjustment and, conversely, those having it the shortest, the best adjustment. The above material gives little support to this hypothesis. This is in agreement with the low relation between the two variables expressed in an r of 0.29 reported in the preceding chapter.

As in the preceding section on severity, case records can be found in which the scoliosis has existed a large percentage of the child's life, yet some have made good and some poor adjustments. The same thing may be found when the disorder has lasted only for a short percentage of their lives. The evidence also seems to suggest a similar type of conclusion; namely, that duration, while an important influence, is only one factor in the total situation.

D. Influence on Adjustment of Parental Attitudes Toward Crippling

Perhaps the most significant influence in the life of the developing child is that of his home and family. Not until late adolescence does the child cease to any great extent to be affected by the attitudes and opinions of his family, especially those of the parents and particularly those of the mother. Since this is true for the normal child, it must be of even greater significance to the crippled child whose illness often forces him to spend a larger proportion of his time within the family group.

The question arises whether or not the family attitudes toward the crippling have an important effect on the development of maladjustment. First of all, over-protection is an attitude to be considered; when all cases are checked, it is found that over-protection, indulgence, or "spoiling" is present in 64 per cent of them. The average subjective ratings of adjustment of these cases is 6.90, which is slightly worse than the average for the whole group, 6.56, and much worse than the average for those cases showing no evidence of over-protection, 5.94.

General observation of the case histories seems to reveal that over-protection on the part of the parents is quite an important factor. As in other children who are subjected to over-solicitation, these children often become quite dependent on their parents for everything and seem to adopt the parental protective attitude toward their crippling. When with others, they become self-conscious about their appearance and feel inferior to such an extent that social contacts are difficult. The following case illustrates this type of situation.

Case Number 5506. This is a sixteen-year-old girl of very superior performance level. She has a moderately severe crippling which has been present sixty per cent of her life. Even before the crippling began the child presented a long history of rather severe childhood illnesses. The father died six years previous to the examination. Since that time the mother has worked as a dressmaker to support herself and the child. There are two older children in the family who do not reside in the home. Since the child had a "winning" personality, she was indulged by her teachers and acquaintances as well as by her mother. While the girl was in her cast at home, the mother worried about keeping her occupied and tried everything she could think of

to distract her and "to keep her from getting moody." She even engaged a private tutor at a salary she could hardly afford to pay. Even this did not seem to satisfy the child, so the mother continued to buy games, books, etc., for her without much success in holding her interest. The child constantly demanded more things and if they were not given her would have hysterics. While a patient in the hospital, she threatened to break her cast and run away and it was necessary to call her mother from some distance to quiet her.

The child now presents a very stubborn, willful disposition. She has a bad temper and if crossed by her mother becomes very angry. She is excessively interested in the type of clothes she wears and always selects the most extreme fashions. Even though her mother is a dressmaker and makes every effort to please her, allowing her to have more clothing than really necessary, she is never satisfied with the things she has. She is very self-conscious about her appearance. She belongs to a group of young people, but has only a few close friends. She dislikes to dance with anyone but her boy friend for fear someone will find out about her deformity. Her mother reports that she is lacking in affection.

An examination of this child's responses on the Rogers test shows that they check with the case history. She is extremely dependent on her family, yet reports having difficulty with her mother. She recognizes inferiority because of her physical defect and feels socially inferior.

This case gives a fairly clear picture of the results of excessive coddling and over-protection. This child has not been allowed to grow up emotionally. Although physically practically an adult, she still employs infantile means of gaining her own ends and has developed no self-reliance or independence. Her social inferiorities seem to stem from the fact that she is self-centered and has not built up adequate emotional behavior relating to social situations. This type of behavior might easily arise, however, in any over-protected child and is not characteristic of the crippled child.

As a contrast to this, Case No. 5390 cited above (p. 46) is a good example. This girl has not had excessive attention and over-solicitude and has not developed undesirable personality traits. She is sociable, has a pleasant disposition, and makes friends easily. To be sure, the crippling is only mildly severe, but it has been present for two years and has been a problem requiring some adjustment both for the child and for the family.

In the next case, there is evidence that while over-protection is present, other factors contribute also to the child's adjustment.

Case Number 5565. This is a fourteen-year-old boy of average performance level who has a moderately severe curvature. Since the child's father died he and his mother have lived with the paternal grandfather. They are in very poor circumstances and there is much quarreling in the home over money matters. The grandfather, according to the child's aunt and uncle, is very old and irritable and has been alcoholic. The mother is believed to be somewhat retarded mentally and has been careless about raising the child. He has always been spoiled because he was small and undernourished, but since developing scoliosis, spoiling has been much worse. He has been allowed to eat anything he wants and to have anything the parents could afford to buy him. The child's own attitude is that he has not been indulged because his mother has not been able to afford everything he wished. According to the child's teacher, neighbors of the family have helped him considerably and have treated him as one of their own children.

The child seemed to be lacking in self-confidence and his attitude was one of discouragement. He is very anxious to get well again so that he can play games with his friends at school. He likes all sports and basketball in particular. He seems to have become more stubborn and moody since the development of scoliosis, but does not seem to show worse than average adjustment.

This boy has been subject to a number of undesirable influences, such as the dissension in the home, the inadequacy of the mother and of the grandfather, poor economic conditions, over-protection by the mother, and illness, but he has managed to make a reasonably satisfactory adjustment. Some influence outside the home, possibly the interest of the neighbors or perhaps of his friends, has undoubtedly acted as a stabilizing force. The over-protection in this particular case has not been of very much significance even though it was present in a rather exaggerated amount.

In answer to the question concerning the importance of family attitudes, we may say that the evidence appears to substantiate the observation that over-protection or over-solicitude is a significant factor. Although over-protection may occur in the case of any child, it seems that when occurring in the case of the crippled child its effects are much more accentuated.

Even though the influence of over-solicitude is considerable, it is not of major import in every case in which it is present. The conclusion must be that the family attitude, while an important one, is merely another factor in the total situation. It should be

emphasized also that it is a factor which can be controlled to a large extent through the change of attitudes and re-education of the parents.

E. Influence of Crippling on Social Behavior

It has already been observed in the preceding chapter that the statistical results seemed to show some suggestion that these children are able to make satisfactory adjustments to other members of their family and within their own family group, but experience difficulty when with strangers, as in school or at social gatherings. This appears to be a very reasonable and expected conclusion. A careful perusal of the case histories, however, does not offer very much support for this belief. When all of the cases are included, it has been found that in only 22 per cent is there evidence of social inferiority and timidity but good family relationships. In 24 per cent of the cases, there was evidence of both poor family and poor social relationships. In 56 per cent of the cases, some type of social difficulty was reported.

In the following histories are presented examples of both types of cases. The first is one in which there are good family relationships, but poor social relationships.

Case Number 5392. This is an eighteen-year-old girl of average performance level who has had a moderately severe defect for four years. During this period she has been in seventeen casts and spent approximately a year and a half in the hospital. She has always gotten along well with her siblings and with her childhood friends who live in the neighborhood, also with the friends of her brother who are frequent visitors to the home. The child has always been somewhat timid with strangers but has become much more so since having to go to high school wearing a plaster cast. She makes very few friends and seems to have no desire to exert an effort to do so. In school she dislikes very much to recite in class and when called upon becomes very nervous and "breaks out in a cold sweat." Her teachers report that she either fails utterly in her class recitations or else talks at great length. She studies continually although in no danger of failing. She has always been self-conscious about her appearance and feels that it has handicapped her in many ways. She thinks she would have associated more with people, attended more social affairs, and taken part in athletics, if she had not been crippled. At present she feels isolated from everything and thinks that people do not want to be friendly with her. Since overhearing several girls

at school making remarks about her cast and laughing at her, this feeling has become accentuated.

The mother, who was quite over-protective, reported that the girl was very dependent upon her and had always been favored because of her condition; i.e., given more things, helped with school work, etc. While in the hospital, the child, according to the mother, instead of talking and playing with the other children listened to the doctors and nurses and became interested in unusual kinds of diseases. She now has a scrapbook of newspaper clippings of all sorts of unusual medical cases. The child's ambition is to study occupational therapy.

An analysis of the girl's responses on the Rogers test indicates considerable agreement with the case history. She shows very practical choices of occupation, she realizes that she is physically inadequate and also that she is not very good-looking, and feels socially inferior because of this. She is dependent on her family but does not quite come up to the expectations of her parents who would like to have her brighter and more sociable.

This case is an excellent example of a girl who was able to get along quite well in her own family group but experienced severe difficulties when in larger more impersonal situations such as found in a school classroom. The basic etiological factors in this particular case are believed to be the over-protection and over-solicitude on the part of the child's family, particularly of the mother, the lack of an objective attitude toward the crippling, and the inferiority feelings arising from the accentuation of the child's defect by the necessity of the wearing of a plaster cast.

The following case is one in which the child shows difficulties in adjusting both at home and with social groups.

Case Number 5430. This is a seventeen-year-old girl of average performance level who has been moderately crippled for a period of 4 years. She is quite self-conscious about it and feels inferior because of her appearance and takes much care of her dress and looks. The mother says the child has been "spoiled" and thinks she should have clothes and go places whether the family can afford it or not. The girl often gets into difficulties with her sister who is jealous because she gets all the attention. The patient "gets mad" easily when she is contradicted by the other children. She reports that the younger children in the family bother her with their noise when they return home from school. The child is timid and bashful with strangers and has difficulty in making friends.

The Rogers test analysis indicates that she feels physical inferiority because of her appearance, that she is socially inferior, and is de-

pendent upon the family. She has some difficulty in getting along with her siblings and does not measure up to the expectations of either of her parents.

As can readily be seen, this child not only experiences social difficulties in more impersonal situations, but is having difficulties in adjusting herself to her sister and the other children in the family. Unwise training by the parents seems to be the major influence in this case.

While there is not much evidence from the case material to uphold the statistical suggestions of good family but poor social adjustment, it is a point that should receive consideration in further studies of crippled children. More significant than this is the fact that a large percentage of the cases do show some type of social inferiority, the cause of which seems to vary in each individual case.

F. Child's Attitude Toward His Crippling

Another question about which there has been a great deal of speculation but little verification is whether or not the crippled child develops feelings of self-consciousness or inferiority because of his defect. The statistical findings obtained from a subsection of the Rogers test failed to indicate more than an average amount of personal inferiority. The case histories show that 54 per cent of the children have developed sensitiveness or self-consciousness because of their crippling. Several cases already cited have developed inferiorities directly traceable to their defects. Case Number 5614 (p. 44), for example, is a case in which self-consciousness, feelings of inferiority, and social timidity have arisen since the scoliosis has developed. In Case Number 5489 (p. 45) an account is given of a child who has developed inferiority feelings although her defect is not very marked. Case Number 5392 (pp. 52-3) also gives an account of a child who has developed inferiority feelings apparently because of her appearance. Case Number 5430 (p. 54) gives a similar account. In contrast to these instances is Case Number 5390 (p. 46) of a child who has failed to develop any ideas of inferiority.

The following case is another in which, although the conditions might have warranted it, inferiority has not arisen.

Case Number 5397. This is a fifteen-year-old girl of average performance level who has had moderately severe defect for slightly more than two years. At first she was quite conscious of the fact that her shoulder and hip protruded, but now she does not think about it and even forgets it when she is on the street or in public places. She has a number of friends who come to visit her often and has a close friend who lives near by who has a similar disposition and is interested in the same things. She has a few "boy friends" but as yet no steady ones. She belongs to several girls' clubs. She likes to play ball, read, listen to the radio, and go to the movies. There has been no over-protection of this child. The father says that he tends to favor the child's sister. The mother is dead.

This child apparently has looked upon her defect in an objective manner, and has attempted to ignore it as far as possible. Since the father has already shown some favoritism toward her sister, the girl seems to feel that an admission of inferiority would make it still more difficult to obtain parental approbation. Her sociability, interest in sports, etc., indicates that she is reacting in a manner expected of a normal child.

Here again the answer to the question whether or not crippling causes feeling of inferiority must be suggestive and not conclusive. There is considerable evidence that inferiority does tend to follow crippling, yet, on the other hand, in a number of cases it did not follow. Whether or not this type of maladjustment is present seems to depend on the occurrence of other significant factors present in each individual case.

G. Relationship Between Compensatory Behavior And Crippling

A very prevalent idea concerning the psychology of crippled individuals is the belief that they tend to develop compensations or substitute interests that in a sense make up for what they have lost through the crippling. If this were true, we should expect to find a high degree of such behavior reported in the case histories. A very careful analysis, however, reveals that in only 32 per cent of the cases is there anything that appears to be of a compensatory nature. It might be supposed further that those individuals who developed compensatory behavior would tend to show better than average adjustment. The mean subjective ratings of adjustment of

these cases is 6.90, which is slightly worse than the average for the whole group, 6.5.

The types of behavior that served as compensations are such things as extreme interest in clothes, interest in reading and study, playing the piano or other musical instruments, writing poetry, drawing, watching sports, keeping scrapbook of unusual medical cases, and interest in religion. An example of such behavior is shown in Case Number 5392 (pp. 52-3). This child has developed two compensations of different types. First of all, she spends a disproportionate amount of time in study although this is not necessary to maintain adequate grades. Her actions seem to indicate that she desires to gain recognition in her school work. Secondly, she has developed an interest in unusual types of medical cases which undoubtedly has its basis in the concern over her own condition. Another example of compensation or possibly defense behavior is given in Case Number 5506 (pp. 48-9). This girl has built up an excessive interest in clothes of extreme fashion and insists upon wearing them at every opportunity.

Several of the cases that have already been cited have shown no evidence of compensations. Case Number 5390 (p. 00) is such an example.

It seems, that while compensations may occur because of the inferiorities arising from crippling, there is less evidence of this type of behavior than of social timidity or inferiority as discussed in previous sections. From the present material there seems to be little support of the Adlerian conception of the results of organic inferiority.

H. Relationship Between Crippling and Intelligence

There has been a great deal of speculation about the possible influence of crippling on intelligence. Several studies in the literature (Fernald, 1925; Lee, 1931) have reported I.Q.'s substantially under the average on groups of crippled children. The findings in the present study fail to show a very significant difference from that which might be expected of an average group of children. Those cases having low I.Q.'s usually give evidence of mental retardation before the disorder develops, as in the following example:

Case Number 5378. This girl is thirteen years of age and was found to have a very low normal performance level (Binet I.Q. 75). Her cosmetic appearance is moderately affected, even though the disorder had only been present a few months. The early developmental history indicated that the child had been slow in almost everything. Her first tooth was cut at sixteen months, she sat alone at nine months, and was toilet trained at thirty-six months. In school she did very poor work and failed in the second, fifth, and sixth grades. Since developing scoliosis the mother reports that she has become more nervous and tends to be moody. Generally she is quite sociable and makes friends easily with others. She is a member of several girls' clubs.

This case shows the typical developmental picture of a retarded child. There is no evidence that the scoliosis had any effect on the child's intellectual growth. All the cases that have been previously presented have been either average performance level or above. The conclusion, therefore, must be that there is little evidence to show that intelligence is influenced by the crippling or conversely that scoliosis affects any particular intellectual group.

I. Relationship Between Age of Crippled Children and Maladjustment

Another question that has often been asked is whether or not maladjustment of the crippled child is influenced by age. The implication of this question is that the older the child, the more difficulty he is likely to experience in solving his problems. The strain of adolescence, difficult enough for the normal child, conceivably should be heightened by the presence of a physical defect. Surprisingly enough, when the group is divided at the fourteen-year level and the adjustment of the two groups compared, no significant difference is found. There is a tendency, however, for the younger group to show a slightly better adjustment than the older group. These results are very tentative, but again point toward the conclusion that no one influence is of major importance in all situations.

J. Comparison Between the Osteomyelitis and Scoliosis Groups

Since both osteomyelitis and scoliosis groups have been included in this study, a comparison of the adjustment of the two groups is

of importance. Unfortunately, the case histories on the osteomyelitis group are not in complete enough form to enable us to analyze them as we have those of the scoliosis group. The statistical results obtained on the psychological tests, however, indicate close agreement between the two groups in intelligence, maze performance, social maturity, and personality adjustment. It is notable also that the average subjective ratings on both groups agree rather closely. These findings suggest that there is little difference between the groups and are in line with the information secured from the intensive study of the scoliosis group, that crippling of itself presents no special type of adjustmental problem.

K. Comparison of a Poorly Adjusted and Well Adjusted Case of Crippling

Since up to this point it has not been possible to point out any definite influence the presence of which is certain to cause an unfavorable adjustment, the question might arise as to just what are the factors in an individual case that contribute to good or bad adjustment. In order that this might be done, two cases have been selected for presentation, one in which all the undesirable factors seemed to have converged and the other in which the difficulties of crippling have been surmounted in a satisfactory manner.

The cases are as follows:

Case Number 5401. This is a fifteen-and-a-half-year old girl of slightly above average normal performance level who is severely crippled and whose appearance is further affected by the necessity of wearing a large brace. The defect has been present throughout her life.

Early History. This was a full term child who weighed seven and a half pounds at birth. The birth was reported difficult. The child was breast fed for three months after which a formula was substituted. The first tooth was present at five months. At six months the child is supposed to have begun to notice other members of the family, at ten months she could imitate her mother in playing "pat-a-cake" games, also noticed pictures on the wall, and at one year recognized pictures in books and paid attention to nursery rhymes. She began to crawl at sixteen months, but did not walk until she was two years of age. No data were available concerning other developmental history. She had the ordinary childhood diseases with moderate severity. She

supposedly had infantile paralysis but the family had no knowledge of any unusual or severe illnesses.

Family. The father, aged 55, was formerly a salesman for a manufacturing company, but lost his job and has not worked for six years. The mother is a college graduate and has a higher degree from an eastern university. Before her marriage she was a teacher. Now she helps support the family by some type of sales work. The brother is 20 and has just joined the Navy.

Interview with Mother. This woman was very defensive and not very cooperative. After the purpose of the examination was explained she expressed a willingness to give the desired information, but it was felt that her account contained many rationalizations. She mentioned that the child seemed always to have difficulty with walking but was unable to explain this since the child never to her knowledge had had poliomyelitis. The child has been in the hospital for a spinal fusion, cast and braces and has spent approximately eleven months over a two and a half year period as an in-patient.

The mother believes that the child feels inferior because of her condition and also because she cannot enter into physical activities with others. She tires easily, is very irritable, and has a "warped disposition." She is very self-conscious about her appearance and feels that people stare at her on the street. The child does not seem to want companionship. She has very few friends and spends most of her time at home. She seems to prefer to read than to be with other girls since she feels that she cannot enter into their activities.

The mother says she has never treated the child any differently because of her crippling, but thinks that her husband has "spoiled" her and tried to shield her. He is very partial to the child, but she is very much irritated at everything he says and does.

The child's father had a good job and made a good salary before the depression, but lost everything and since that time has made no effort to get any work. The mother blames him for a great deal of the difficulty with the child. She says he never does anything for the children; does not even get along with the older boy. She finally admitted that the relationship between herself and her husband was very unpleasant. She believes that it is partly the fault of her quick temper, but blames him because he is resentful and broods over things for a long time.

The mother gave the impression of being a domineering, quarrelsome type of person who condescended to cooperate only because she had decided it would be of some value.

Interview with Patient. The child was a large ungainly girl, who was very noticeably deformed and not very tastefully dressed. She consented to answer questions, but gave the impression that she was not very anxious to cooperate.

She reported that her defect caused her a great deal of embarrass-

ment. When walking along the street people often stare at her and she feels that they talk about her appearance. She enjoys being with old friends and people that she knows well, but she does not like to be with strangers. She does not make friends easily.

She admitted using her crippled back as an excuse to get out of doing lots of things she would otherwise have had to do. If she is unable to get something from one parent she goes to the other. She says she has a bad temper. Since school has started she has begun to bite her fingernails but cannot understand the reason for it. She and her brother get along well together, but she does not like her father and cannot get along with him.

There are many factors contributing to the maladjustment of this case. First of all, there is evidence of extremely bad parental relationships. The father, formerly a good provider, has lost all ambition and interest in supporting his family and is content to let his wife make the living. He has become a discouraged, brooding type of individual who blames others for his failure. The child's mother, on the other hand, is a domineering, quick-tempered person. The family quarrels have undoubtedly had considerable effect on the child. The parents do not even agree on disciplining the child or in what might reasonably be expected of her. Her crippling has been present to a rather severe degree throughout her life and the mother's attitude indicated that it had spoiled her plans for the daughter. The child's feeling of discouragement, self-consciousness, and inferiority seem to have arisen from a similar attitude toward the crippling on the part of the mother.

In the following case, although a defect was present, the child shows average or better adjustment.

Case Number 5368. This is a sixteen year-old boy of average performance level. When seen this child was in a cast, so his defect could not be rated; however, from information obtained in the case history it was believed to be moderately severe.

Early History. The developmental history of this child was quite regular. He was a full term child and weighed seven pounds at birth. He walked at fourteen months and talked in sentences at eighteen months. He had the usual childhood diseases and at four years of age had poliomyelitis. Six months following this he had some difficulty with his left leg causing him to limp very slightly. Approximately a year ago a slight curvature of the spine was noticed which has gradually become worse.

Family. The father, aged 43, is a farmer and in good health. He

has had two children by a former marriage. His first wife died. The mother, aged 37, is at present in good health. The patient is the third of nine siblings who presumably are reasonably well adjusted.

Interview with the Mother. The mother was a very cooperative woman who appeared to be giving an adequate account of the child's behavior. She said that the child was very cheerful and had a pleasant, agreeable disposition. He feels badly because he is unable to take part in all the games that the other children play, but he enters into every activity that is possible and is able to do almost everything. He has had several small jobs and has made enough money to buy a guitar and has learned how to play fairly well. The parents have not over-protected him to any great extent but have encouraged his interest in music.

Interview with Patient. The child was in a cast when seen for the interview. He was very cooperative and likeable and did not seem to be discouraged in any way. He said that he was not much worried about his condition, but that he was embarrassed if he happened to stumble before a group of people. His principal worry was that his defect prevented him from running very fast. He was very much interested in sports and was particularly interested in basketball and baseball. He mentioned that a place on his school basketball team was waiting for him when he returned from the hospital. He was very much interested in boxing also, but since he is unable to participate in that sport he now coaches his younger brother.

He was forced to drop out of school last year because of his physical condition. He does not have any definite ambition, but would like to be a mechanic.

Even though this child has a physical defect, he seems to have made a good personality adjustment. The family situation is apparently very stable. The child is among the older children of a large family and consequently has not received the pampering ordinarily given a younger child. The crippling seems to have been met in an objective manner. The parents have encouraged certain pursuits such as music, but have insisted that he aid in the purchase of an instrument and lessons. Since he was hampered from entering a great many physical activities he chose those in which he was best able to play. In one in which he could not enter at all he apparently received satisfaction by coaching his younger brother. He has not developed any disagreeable personality traits or characteristics of poor adjustment.

These two cases are at opposite extremes of adjustment. In the former, the child presented a severe crippling, was raised in a very

unstable family, was subject to over-protection, poor training, etc. In the latter case, the crippling was moderate, the home situation was stable, the defect was objectified and the child was allowed outlets in other channels. A comparison of these cases suggests further substantiation of the already observed conditions, that the number and severity of the problems to which the child has to adjust is the most important factor in determining the type of adjustment.

L. Summary

From a detailed analysis of the case histories it was attempted to answer or at least give information about several questions that seemed to be of significance in connection with the psychological aspects of crippling. The first question concerned the part played by the defect in adjustment. The data seemed to suggest that when some other factor such as a broken home, poor family relationships, over-protective parents and other similar difficulties played an equal part with the crippling, the child had greater adjustmental difficulties than when only the crippling itself was present. Next, the influences of cosmetic appearance and duration of crippling on adjustment were considered. Even though the statistical results have indicated some relationship between these factors and maladjustment, the case history analysis tends to support the idea that these are merely contributing factors to the total situation.

Following this, the relationship between parental attitudes toward crippling and maladjustment was considered. There was some indication that considerable over-protection was present and that the cases in which it was noted were slightly more maladjusted than average. However, further analysis revealed that over-protection was not of major importance in every case in which it appeared. It seemed to be another possible contributing factor toward maladjustment, but of not much more importance in the case of crippled children than in the case of any children.

Not very much evidence could be obtained from the case material to uphold the suggestion from the statistical results that these children show good family but poor social relationships, but there was some indication of social inferiority. Some suggestion of

self-consciousness and personal inferiority arising from the crippling was noticed. There was not much evidence, however, of any compensatory behavior having as its basis a feeling of inferiority. There was no indication whatsoever that the crippling had any effect on intelligence or affected any particular intellectual or age group. A comparison of both the osteomyelitis and the scoliosis groups in those phases in which the most information was available failed to reveal any significant difference between the two groups.

CHAPTER V

CONCLUSIONS

Although the results obtained on this study are not offered as a final answer to the problem of the psychological effects of crippling, it is believed that a basis has been established from which further work may be extended. Almost every source from which information has been gathered seems to give evidence that the crippling has no unique influence on the child's behavior. The tests of intelligence and social maturity have not deviated widely from the normal. The personality tests have indicated essentially normal behavior as have, likewise, the ratings of personality adjustment. The other statistical procedures, also, have given results that appear to be within average limits. From the case analysis little evidence of any consistent influence of crippling on inferiority, social maladjustment, or compensation is available. It appears that the crippling has played no more important a role in the etiology of maladjustment than has any other undesirable influence in the child's life. Whether maladjustment occurs seems to be dependent upon the number and severity of the problems with which the child is confronted and not alone on the presence of the crippling.

These findings do not seem to agree with some of the opinions expressed in the literature. No evidence was found to support Wile (1925), Curti (1938), and others, who contend that crippling of the body is an assurance of a "crippled personality." All the information obtained appears to deny such a broad generalization and has placed responsibility for maladjustment in cripples more on a combination of influences than upon any single factor.

Although the importance of family attitudes toward the defect has been recognized, the present results do not seem to indicate that this is of such far-reaching importance as Elliot (1929), Hubbard (1930), and Anderson (1934) have suggested. The results of this study are more in agreement with those of Allen and Pearson (1928), who have pointed out that each individual case presents a special problem. Maladjustment in cripples, they believe, may occur just as readily from a combination of other causes as from deformity itself.

From the present research, a number of changes in the methodology of approaching the psychological study of crippled children has been suggested. One of the most significant recommendations is a change in the type of cases studied. The two groups employed presented severe medical problems, but did not have the marked cosmetic deformity characteristic of some of the other types of crippling. These children, except while under actual treatment, were able to move about freely and to engage in a great many activities. A study of those with marked involvement of both arms and legs should be undertaken.

It would appear from the present findings that no significant psychological difference seems to exist between the disease classifications. There seems to be no reason why the groups should be kept separate for study. From the psychological point of view, the impairment of the various members and the cosmetic appearance are of much more significance than the etiology of the disorder.

In the present study, an emphasis was placed on the accumulation of a large number of cases with a minimum amount of time spent in the study of each. It is believed that much more benefit would be obtained from an intensive analysis of each case. This should include several interviews with the child and parents, interviews with other members of the family, and an observation, or the report of an observation, of the child in his own home. It is believed, also, that the future studies should be confined largely to hospital in-patients, since the child's behavior may be observed at some length on the ward, the parents have more time and seem more anxious to cooperate, and the children are more accessible for examination and interview.

More specific recommendations for the interview and tests pro-

gram may be suggested. First, more emphasis should be placed on securing evidence of socially desirable as well as socially unacceptable behavior. Second, the testing program should be extended only to the point where it will contribute to a better understanding of the child. Third, if a test of personality adjustment is included, it should be selected on the basis of its reliability and validity as well as upon the type of items from which it is constructed.

A. Summary

The present study was undertaken as the initial exploratory step in an extended research program to investigate the psychological behavior of crippled children. Disagreement in the literature of opinion, the lack of adequate experimental work, and the requests of orthopedic physicians have prompted this investigation. At the suggestion of the Chief Orthopedic Surgeon of the James Whitcomb Riley Hospital for Children, this work was confined to a group of 50 cases of scoliosis and 30 cases of osteomyelitis.

The problem was approached from two angles: first, through an extensive testing program, and, second, through a series of interviews with both the children and the parents. The tests employed were the familiar ones ordinarily used in the psychological clinic. In the interview it was attempted to obtain a complete social and developmental history, and to obtain a detailed account of the child's behavior. An analysis was made of both the statistical results and the entire case histories.

From the test results the following information was obtained:

1. Although the mean I.Q. was within the limits of normality, a statistically significant difference was found between the mean I.Q. of the scoliosis group and the Stanford-Binet norm. In the osteomyelitis group, no statistical difference between the Stanford-Binet norm or the mean of the scoliosis group could be discovered. Performances on both the Maze Tests and the Social Maturity Scale indicate normality.

2. The results obtained on the Rogers Test of Personality Adjustment indicate normality when the Total Scores are considered. The scorings on the subsections of this test are also with-

in average limits with the exception of the Family Relationship Score, which is better than average.

3. Ratings of the entire case material, which have been shown to have a high degree of reliability, have indicated that both groups come within average classifications although toward the end of the scale indicating poor adjustment.

4. A low positive correlation was found to exist between duration of the crippling and maladjustment.

5. An appreciable positive correlation was present between severity of crippling and maladjustment.

6. Information regarding school placements indicated that the group does not diverge widely from the average with respect to chronological and mental age grade placements.

7. An analysis of the individual questions on the Rogers Test have failed to give any indication that the group is different from a normal one of similar age and composition.

Since the limitations of psychological measurement were recognized, a considerable emphasis was placed on the analysis of cases. The results suggested from the analysis were:

1. When serious problems in addition to the crippling were present at the same time, it appeared that the children experienced difficulty in adjusting.

2. Physical handicap may play a part in personality maladjustment, but presence of the defect does not appear to be sufficient to occasion development of undesirable traits.

3. Duration of the crippling, while an important influence, seemed to be only one factor in the situation. The same conclusion was reached in the case of over-protection by the family.

4. Social and personal inferiority seemed to have been present in a significant number of cases, but the cause was not always traceable to the crippling. Whether or not this type of maladjustment arose from the crippling seemed to be dependent upon the presence of other important factors.

5. There was very little evidence that compensatory behavior was occasioned by the crippling.

6. There was not much suggestion that the crippling had any

effect on intelligence or influenced any particular intellectual or age group.

7. In all the comparisons that could be made between the scoliosis and the osteomyelitis groups, no psychological differences between them could be discovered.

8. When a comparison was made between two cases of crippling, one showing bad adjustment and the other showing good adjustment, more undesirable influences were found in the former than in the latter case.

While the results of this study are not offered as the final answer to the problem of the psychological effects of crippling, certain general conclusions are suggested:

1. Those with physical handicaps do not as a group seem to present any more or any different problems than any unselected group of children. There is no evidence that a "crippled personality" inevitably results from physical defects.

2. Whether or not maladjustment occurs seems to be dependent upon the number and severity of the problems confronting the crippled child.

3. Further research should include those cases more severely impaired, should not separate cases into disease classifications, should consist of more intensive analysis of each case and should place more emphasis on socially desirable behavior.

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